CALTECH NEWS

April 1986

Goldberger will retire as president by June 30, 1988

Marvin L. Goldberger has announced his intention to retire as president of Caltech by June 30, 1988. That date will mark the end of the Caltech academic year following Goldberger's 65th birthday, and is consistent with the practice normally followed by Caltech faculty serving in administrative positions. The date also will be the tenth anniversary of his service as president of the Institute.

According to Goldberger's announcement to Caltech faculty, students, and staff, "I am notifying you of my plans somewhat earlier than is customary for two reasons. First, it is very important that there be a smooth transition with sufficient time for the necessary planning. Second, a number of Caltech's important goals can be more effectively accomplished if there is no ambiguity about the timing of presidential succession."

Goldberger also commented, "My retirement is more than two years in the future. During this time, I will be working with the utmost effort and commitment to assure that my successor assumes the presidency of an academically strong, ebullient, and financially stable institution."

Caltech's Board of Trustees will initiate the search process for a new president at a date to be determined.

$1 million IBM grant: for innovative research, education

Promising new faculty research ventures and science education for college and high school students will be among efforts funded by a $1 million grant to Caltech from IBM.

"This grant helps meet some of Caltech's most vital needs," said President Marvin L. Goldberger. "For example, a portion will be used to establish the IBM Research Fund to

Continued on page 3

The historic Calder arches find a new place of honor on the new Arnold and Mabel Beckman Laboratory of Chemical Synthesis. The arches once crowned the west front of Throop Hall but, after Throop was demolished, they waited for a new location for more than 12 years in a city of Pasadena storage yard.

Political scientists find strong Asian-community support for Reagan

Many Asians, Latins back death penalty

Major support for President Reagan within the Asian community, strong Latino and Asian support for the death penalty, and greater discrimination against Blacks than against Asians or Latinos: these are some of the findings of a major study of minorities in California by a team of Caltech political scientists.

The study was conducted over a two-year period by Bruce Cain (associate professor of political science) and by Roderick Kiewiet (associate professor of political science).

Commissioned by the prestigious Seaver Institute, its conclusions were announced in March at a conference on campus on the political and socioeconomic assimilation of California's Latino and Asian minorities, and the related implications for state politics and policy makers.

Henry Cisneros, mayor of San Antonio, was the keynote speaker.

Among findings from the report:

- 67 percent of all Asians and 36 percent of Latinos surveyed voted for Ronald Reagan in 1984. Only 6 percent of Blacks voted for him.
- Asians are less likely to register as Democrats than are other minority groups. Of the Asians, 42 percent were registered Democrats compared to 89 percent for Blacks and 75 percent for Latinos.
- Of those surveyed, 73 percent of all Asians and 57 percent of all Latinos supported the death penalty. This compares with 75 percent of Whites and 47 percent of Blacks.
- Of all Latinos surveyed, 63 percent believe in amnesty for undocumented aliens, while much smaller percentages of Whites, Asians, and Blacks favor amnesty. Survey results reveal that support for amnesty lessens with each generation of Latinos—from 74 percent for the first generation to 49 percent for the third generation.
- Only about one-third of all Latinos surveyed claimed to have experienced personal discrimination, compared with two-thirds of all Blacks queried.
- Whites are less supportive of bilingual education than any other group, and most supportive of employer sanctions.

Continued on page 6

Beckman Lab to be dedicated April 25

Dedication ceremonies for the Arnold and Mabel Beckman Laboratory of Chemical Synthesis will be held on campus April 25. Events scheduled for the day include, in addition to the dedication, a presentation of the second annual Arnold O. Beckman Lecture in Chemistry and a dinner celebrating the 50th anniversary of the founding of Beckman Instruments.

The dedication ceremonies commemorate completion of the first phase of renovation of Crellin Laboratory of Chemistry and Church Laboratory of Chemical Biology to create a new facility. The project was made possible by a $6.5 million gift from the Arnold and Mabel Beckman Foundation.

The dedication program will begin at 4 p.m. beneath the Calder arches, which were installed this winter across a span connecting Crellin Lab with the new laboratory. Speakers will include President Marvin L. Goldberger; Fred C. Anson, chairman of the Division of Chemistry and Chemical Engineering; Harry B. Gray, the Arnold O. Beckman Professor of Chemistry; and Peter B. Dervan, professor of chemistry, whose laboratory is in the newly renovated structure.

After the dedication guests will tour the newly completed portion of the new facility. A reception in the Athenaeum will precede a dinner celebrating the 50th anniversary of the founding of Beckman Instruments. Attending will be Beckman Instruments executives, members of the Caltech Board of Trustees, faculty members of the Division of Chemistry and Chemical Engineering, and special guests.

Before the dedication, the second annual Arnold O. Beckman Lecture will be delivered in the Sturdivant Lecture Hall (153 Noyes Laboratory) by Jerrold Meinwald, the Goldwin Smith Professor of Chemistry at Cornell University.

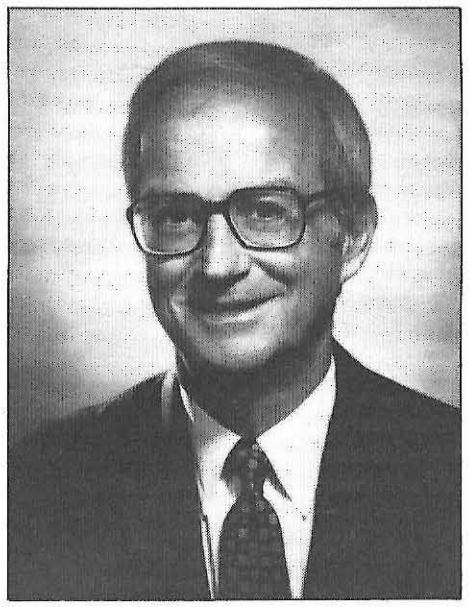
Creation of the new Arnold and Mabel Beckman Laboratory of Chemical Synthesis includes the most modern instrumentation possible for research in bio-organic chemistry, polymers, natural product synthesis, and catalysis.

EQL given $245,000 grant

The Andrew W. Mellon Foundation has granted $245,000 to the Environmental Quality Laboratory (EQL) for research on the transport and fate of water pollutants.

Principal investigators are Norman H. Brooks (the James Irvine Professor of Environmental and Civil Engineering and director of EQL), James J. Morgan (professor of environmental engineering science), and Robert C. Y. Koh, senior research associate in environmental engineering science.

The research will have two main areas of focus—the fate of sludge particles in seawater and chemical reactions affecting the nature of groundwater pollutants as they flow through soils and aquifers.



Venture capitalist Benjamin Rosen has helped launch such firms as COMPAQ Computer Corporation and Lotus Development Corporation.

Caltech one of six beneficiaries of $200 million estate

Caltech has been named one-sixth beneficiary of the approximately $200 million estate of the late Liliore Green Rains of Beverly Hills, President Marvin L. Goldberger recently announced.

Mrs. (William) Rains, who died November 7, 1985, designated the Institute as one of six institutions that will share equally in the distribution of assets of the estate. Her gift establishes the Liliore G. Rains Fund at Caltech, which permits unrestricted use of the money.

The other five recipients are Good Samaritan Hospital, Stanford University, The Menninger Foundation, Pomona College, and Loyola Marymount University.

Rains is one of three daughters of oil pioneer Burton Green, founder and president of Belridge Oil Company (sold to Shell Oil in 1979), president of the Rodeo Land & Water Company, and a founder and major developer of Beverly Hills.

In 1981 an anonymous donor made a $1 million gift to Caltech to establish the Burton E. Green Scholarship Fund. Since that time, 75 Caltech undergraduates have been assisted by gifts from that fund, ranging from $50 to $19,000.

Faculty-Student Conference

The fourth biennial Faculty-Student Conference attracted some 100 persons to Baxter Lecture Hall for an exchange of opinions on a series of issues—teaching quality, student facilities, the core curriculum, humanities and social sciences, undergraduate research and computing, and student morale. A series of post-conference meetings is planned for further discussion around issues that emerged. Above: senior Jeanine Gainey talks with John D. Roberts (Institute Professor of Chemistry) and Bruce E. Cain (associate professor of political science) during a break.

Benjamin Rosen named to Caltech Board of Trustees

Benjamin Rosen (BS '54), the venture capitalist who has helped launch such firms as COMPAQ Computer Corporation and Lotus Development Corporation, has been named to the Caltech Board of Trustees, Chairman Ruben F. Mettler announced.

"Ben Rosen's dynamism is well known in the computer industry, where he has concentrated his extraordinary talents," said Mettler. "We are delighted that he has agreed to lend those talents to helping Caltech."

Rosen is a partner in Sevin Rosen Management, the venture capital firm that has to date invested in more than 30 computer, electronics, telecommunications, and other high technology start-up companies. He is chairman of COMPAQ and a former founding director of Lotus, and he is also chairman of the board of Ansa Software and a director of General Parametrics Corporation, Expertel, and Quarterdeck Office Systems.

He is a member of the President's Council of the Memorial Sloan-Kettering Cancer Center, the advisory board of Tulane University School of Business, the board of directors of the Technology Center of Silicon Valley, and the New York Society of Security Analysts.

Vol. 20, No. 2 **April 1986**

Issued six times a year (Feb., April, June, Aug., Oct., and Dec.) and published by the California Institute of Technology and the Alumni Association, 1201 East California Blvd., Pasadena, California 91125. Second class postage paid at Pasadena, California. Postmaster: Please send address changes to *Caltech News*, 1-71, California Institute of Technology, Pasadena, CA 91125.

Editor: Winifred Veronda
Copy editor: Diane Davis
Personals/Obituaries: Kathy Danaher
Production artist: Barbara Wirick
Contributors: Phyllis Brewster, Heidi Aspaturian
Photographer: Robert Paz

USPS 085-640

IPAC: a busy research center after March dedication

The Infrared Processing and Analysis Center (IPAC), established to study the data gathered by the Infrared Astronomical Satellite, IRAS, officially opened its doors on South Wilson in a dedication ceremony on March 19.

Constructed entirely with funds furnished by Caltech, IPAC will operate on an annual budget provided by NASA. About 25 percent of the budget will support the research of visiting scientists, who will work at their institutions or at IPAC.

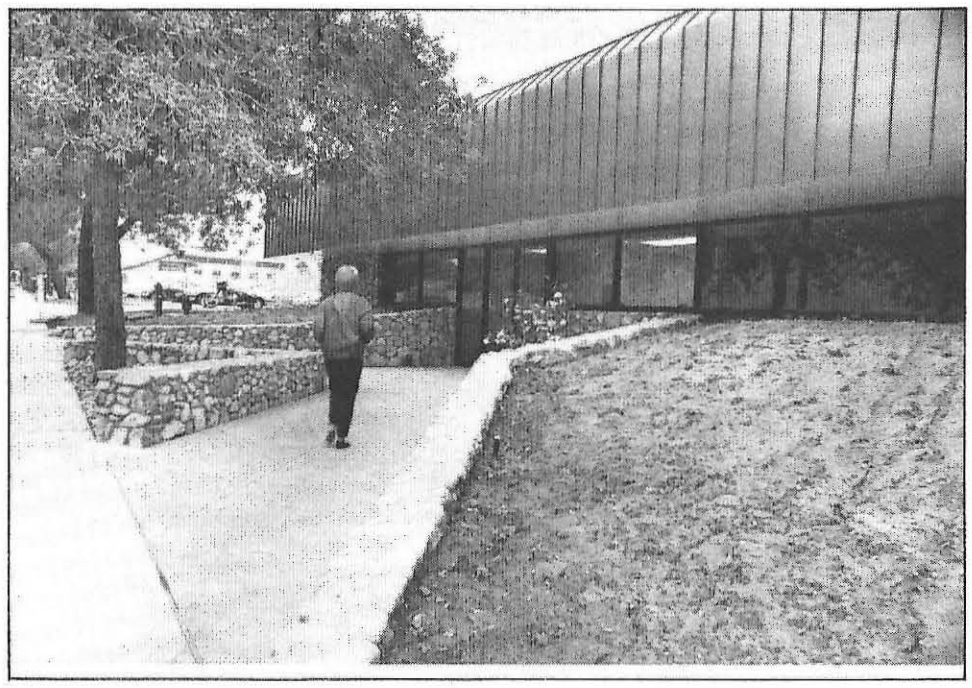
"IPAC represents the first time NASA has established a national resource center in astronomy on a university campus, and we expect that both the center and Caltech will benefit from the association," noted Gael Squibb, IPAC project manager. "We anticipate that this year alone, about 100 scientists will visit IPAC to conduct research."

IRAS, a joint venture of the United States, the Netherlands, and the United Kingdom, was launched by JPL in January 1983, to survey all the objects in the universe that emit energy in the form of infrared radiation, or heat.

Its more spectacular discoveries have included the comet Araki-Atok, which passes within three million miles of earth, galaxies that appear to be undergoing bursts of star formation, and rings of material around nearby stars which scientists conjecture could be planetary systems.

Senior Research Associate in Astronomy Tom Soifer is IPAC chief scientist, and JPL scientist Charles Beichman is IPAC project scientist for data analysis. Gerry Neugebauer, the Howard Hughes Professor and professor of physics, who served as U.S. co-chairman of the joint IRAS science working group, is head of the IRAS team.

President Marvin L. Goldberger, JPL Deputy Director Robert J. Parks, and IPAC representatives spoke briefly at the dedication before an audience of physics and astronomy faculty, invited guests, and the scientists, technicians, and data processors who moved into IPAC last month, along with the two billion bits of data returned by IRAS.



IPAC is the first national resource center in astronomy to be established by NASA on a university campus. Scientists from throughout the world visit it to conduct research.

Markey Trust grant points way, to Caltech goal as world developmental biology center

Caltech has set a goal of becoming a world center of developmental biology, thanks to a $12.5 million grant from the Lucille P. Markey Charitable Trust of Miami, Florida.

The Markey Trust grant will make it possible for Caltech to expand its developmental biology studies by funding innovative research ideas proposed by Institute faculty. It will also allow Caltech to replace outdated research equipment, to acquire advanced instrumentation, and to further develop a microchemical facility where scientists and engineers will build new machines for genetic engineering.

Additionally, the facility will provide a protein and gene analysis and construction service for other Institute researchers.

President Marvin L. Goldberger expressed a "deep debt of gratitude to the Markey Trust for enabling Caltech to launch this promising new effort to understand the machinery of life.

"Our biology division can already provide a superb nucleus for such a program. We have outstanding developmental biologists on the faculty, talented students, unique capabilities in microchemical instrumentation ('gene machines') and a tradition of excellence," Goldberger said. Developmental biologists seek to understand how the genetic information in DNA is programmed to be translated into proteins that in turn form the patterns of life. They study how embryos develop into full-fledged adult animals, and how simple cells grow to form intricate structures such as the brain. This basic knowledge can lead to the understanding of, and ultimately to treatments for, an enormous variety of diseases, as well as of birth defects and genetic disorders.

Caltech has led in the development of automated machines to analyze and construct genes and proteins—devices that are enabling researchers to carry out in a matter of weeks genetic engineering experiments that would otherwise have required decades of manual laboratory work.

The Markey Trust was created by the late Lucille Parker (Wright) Markey, owner of the famed Calumet Farm thoroughbred breeding and racing stable in Lexington, Kentucky. Before she died in 1982, Mrs. Markey directed that all Trust funds be spent by 1997, exclusively in support of basic medical research. The estate, currently in probate, is expected to be worth more than $300 million.

On the cover

Joy Watanabe is deep into her role as a teaching assistant for a freshman holography lab. A senior, she plans to go on to graduate school where she will pursue electro-optics research. During 1985-86 she served as ASCIT president.

$1 million IBM grant

Continued from page 1

support research initiatives by new and established faculty members.

"Funds for this purpose are absolutely necessary if we are to attempt innovative research programs that would not normally be supported by traditional sources."

Goldberger pointed out that funds such as the IBM gift strengthen the Institute's capacity to attract support from more traditional funding sources once the research program is established. The costs to start new research programs typically range from $100,000 to $500,000, over one or several years.

Goldberger noted that the IBM Research Fund will also be used to bring outstanding young scholars to the Institute as visitors.

In addition, the IBM grant will help support two projects by Caltech to educate young people in science and technology.

One is the Summer Undergraduate Research Fellowship (SURF) program, in which Caltech students devise research projects and, with the sponsorship of faculty advisers, carry them out over the summer. This program, established in 1979, has helped 432 Caltech undergraduates to get a taste of professional-level scientific research. IBM has helped support the SURF program since 1982.

The other program aided by the IBM grant will be the Institute's Secondary Schools Science Project—supported by IBM since 1981. Under this program, about 300 junior and senior high school students take free classes in science and mathematics at Caltech each summer, and additional students come to campus for classes each Saturday during a 26-week session.

There is no charge, and there are no admission requirements. This enables students from all backgrounds who have the necessary interest and commitment to science and mathematics to participate.

Stone honored for research

Edward Stone, professor of physics, has been elected a voting member of the International Academy of Astronautics, an honor conferred upon researchers who have "distinguished themselves in basic engineering and life science in areas connected with astronautics."

The Paris-based organization was founded in 1960 to promote international cooperation in the exploration of space.

4

Michael O'Malley

Teaching machines how to listen

By Winifred Veronda

In one respect, at least, machines that can speak tend to resemble their human counterparts: fast talkers are more frequently encountered than good listeners.

But at Berkeley Systems Works, Inc. (BSW), Michael O'Malley (BS '60, MS '61) and his staff have been hard at work for more than six years, designing the hardware and software for a generation of machines that cannot only talk, but are skilled at listening.

None of this was on O'Malley's mind when he graduated from Santa Monica High School in 1956 and enrolled at the Institute, where he was a member of Fleming House. O'Malley had come in second in the state for a physics prize, and an article in *Time* magazine said that Caltech was the top school in the country for science.

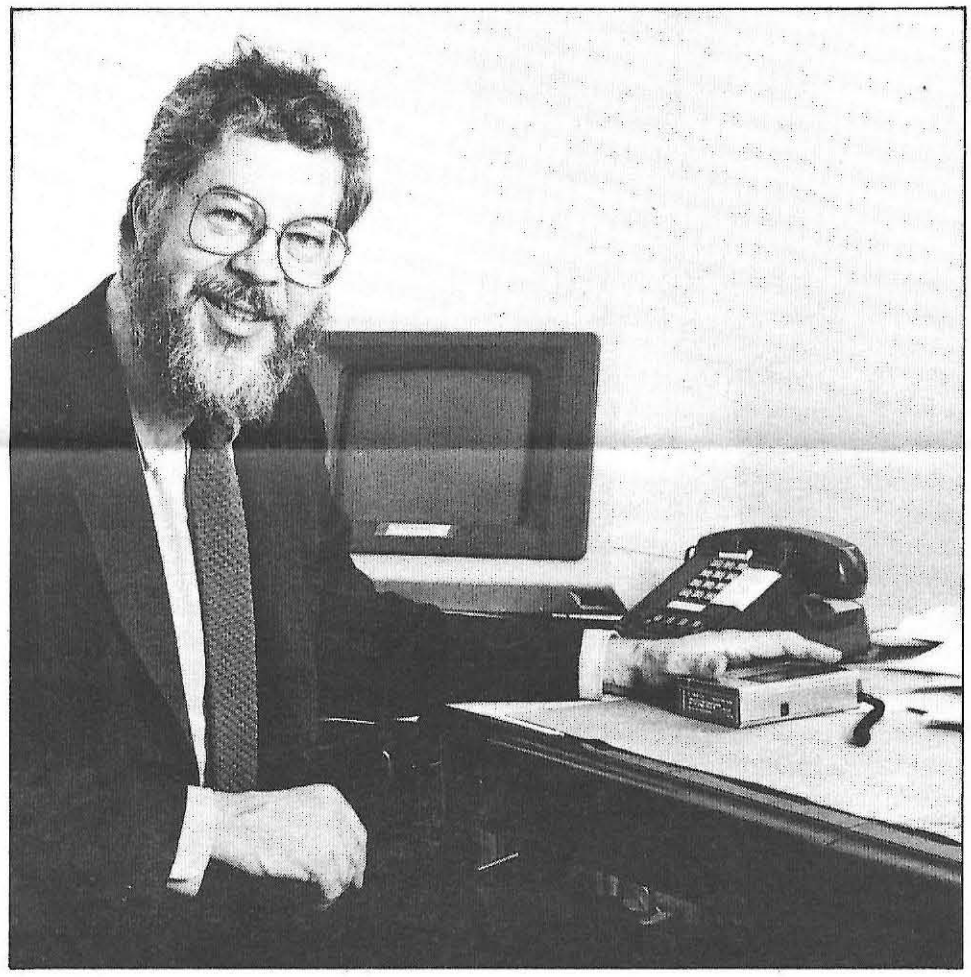
The computer age was in its infancy and Caltech, in those years, offered little course work to inspire students to computer science careers. "There was a Litton computer—the LGP 30—on campus, as big as a desk," O'Malley says. "It did what a calculator can do today. A few of us were able to play with it. This was my first experience with a computer."

O'Malley also enrolled in the one computer course that the Institute offered. "The computers we used in the class were small—and limited in what they could do," he says, "but once you understood them you could interact with them in a very personal way."

But if the Institute's computer science offerings were limited, there were other and more powerful sources of inspiration on campus. "Several of my teachers had received the Nobel Prize or would receive it," O'Malley says—"Richard Feynman, George Beadle, Roger Sperry—I took classes from all of them."

Particularly influential was Sperry's course on the right and left hemispheres of the brain. This class, and a course that O'Malley took in algebraic logic, deepened his interest in the parallels between human consciousness and artificial intelligence and did much to establish his goal for his career.

After completing his MS degree at the Institute, O'Malley went on to the University of Michigan to study for a PhD in communications sciences. The Michigan program was unique in that it applied a systems approach to the study of natural systems. It asked how mathematical models could be used to explain the functioning of hormones, for example, or how cells fire, or how the linguistic patterns function that create human speech.



Michael O'Malley and his staff have been hard at work designing the hardware and software for a generation of machines that cannot only talk, but are skilled at listening.

There wasn't much access to computers at Michigan in 1961 either, and no time sharing. "When you wanted to create a program," says O'Malley, "you punched cards and put them on a windowsill and a few days later the program came back."

O'Malley's PhD studies took him deep into linguistics, and at Michigan he taught both linguistics and computer science. "In the computer science program there, this was considered a logical combination," he says.

The approach to artificial intelligence at other schools in 1961 didn't attract many students, O'Malley observes. "Most people didn't want to fool with the linguistics and the natural systems studies," he says. "They wanted to learn the engineering aspects and go out and get jobs. Those who were in the Michigan program tended to become the leaders in the industry in the development of synthetic speech."

While he was at Michigan, O'Malley became a leader in a project funded by the U.S. Defense Department's Advanced Research Projects Agency (ARPA)—a project that combined computer science, linguistics, and information theory in efforts to learn more about how to teach computers how to talk and, even more challenging, how to listen.

O'Malley was involved in this project for five years, and brought his part of it to the Bay Area in 1973 when he joined the faculty in engineering and computer science at UC Berkeley. "There was no more teaching of linguistics at Berkeley," he says. "It was all engineering."

O'Malley taught at UC Berkeley until 1978. Meanwhile, he had been working as a consultant to several firms and one of these, a Japanese electronics company, asked him to create the technology for a machine that would talk—and could be marketed for $10. Quite simply, they wanted a product that would be useful and practical, and that would sell well.

O'Malley decided to work with the company on its concept: a machine to help its users learn to speak English. "I promised to do some research so I could show them the idea was impossible," he says. "Then I said 'ha! Here's a way it might work!' "

"When you have little time and money, you have to be creative. The government would have done a five-year program on a million-dollar machine. MIT would have taken four years. I now believed I could develop the device in six months."

As it turned out, O'Malley needed an additional six months beyond the first semester. The Japanese firm extended his fee and, after a year, O'Malley gave them their product.

Meanwhile, he had been thinking increasingly about forming his own company and had begun to look for office space. The area that he chose may have influenced the future of his enterprise.

"We found space—more than we thought we needed—and followed Murphy's law as we expanded to fill it," he says.

O'Malley's staffing challenge for the new endeavor was to build an interdisciplinary team of computational linguists to design the software and microprocessors necessary to create a new speech technology. Recruiting heavily at UC Berkeley, he brought in linguists, programmers, computer scientists, and electrical engineers.

He also persuaded Mrs. O'Malley, a journalist who had just taken a law degree, to handle contracts and managerial duties. The O'Malleys' three daughters also began working part-time for the firm.

In selecting their projects, O'Malley and his team have focused on a few major clients. "Custom designing speech synthesis and recognition is a big job," says Mrs. O'Malley. "Our typical project usually takes at least a year."

The research, which frequently puts the O'Malleys on the road to locations ranging from the East Coast to Tokyo, focuses on four major areas:

• Text to speech, where the computer converts text into sound. This technology makes it possible for a computer to create an unlimited vocabulary from stored information. In the business world, it means that field workers can use phones to get information without the need for a terminal at their end of the line.

• Word and phrase recognition, making it possible for a person to speak a brief set of words that are recognizable by a computer into a microphone. For example, this capacity would enable a legal secretary wanting to check the latest case citations on drunken driving to have a computer read them to her over the telephone. Airplane schedules, stock market reports, and delivery schedules are other examples of information that might be obtained in this way. The information being transmitted would have been fed into a software system where it was turned into computer speech.

• Speaker verification, whereby a computer confirms the identity of a bank customer or other user.

• Voice storage, where human speech is entered into the computer. There it can be compressed and sent to a remote location. The recipient doesn't need his own computer terminal to receive the information. He only has to dial a telephone to have his "voice mail" read to him.

The O'Malleys strive for computer voices without regional accents. This once drew a complaint in Boston, where a potential customer complained that "your computer sounds funny."

Designing software that can produce a faithful reproduction of the human voice is a big part of the job at BSW. Human speech exists in an analog form, which means that sounds vary over a wide range. But computers can only understand ones and zeroes represented by electrical signals or by the absence of electrical signals. This means that the analog information contained in normal speech must be converted into digital form by the chip—and that the output must sound reasonably natural.

In this process, words must be reduced to phonemes, their components, and the way the mouth moves in creating these sounds—and which sounds should be emphasized—must be modeled into the software program.

Customers have remarked that the attentive work of BSW's linguists produces a surprisingly realistic sound. But O'Malley says that "although we make the best model we can, the machine still sounds pretty stupid. It *sounds* like a computer, and it doesn't understand what it's talking about."

In some contexts, of course, it is better for computer speech to sound *intelligent* but not human. For example, O'Malley observes that when a pilot hears a command to pull up his airplane, he wants to know that a computer is talking to him, not a hijacker.

The O'Malleys offer customers the choice of several voices; they strive for voices without regional accents. This standard once drew a complaint in Boston, where a potential customer observed that "your computer really sounds funny."

Although applications for business offices consume most of BSW's efforts, the firm's customers have ventured into computer games. In Championship Baseball, for example, users with headset microphones could read in both team rosters, issue player commands, and listen to the play-by-play—including calls by a talking umpire.

The O'Malleys are keenly interested in applications for education or for the handicapped. They believe there is great potential in these fields, but the market is not yet there because of limits on funding. One such project, developed by another entrepreneur and carried to the experimental phase, enables children to type information into a computer and have the computer read it back, giving immediate feedback on the sound of the words.

Studies of the participants showed that children from culturally underprivileged backgrounds learned to read as rapidly as those from other homes, and that boys learned as quickly as girls.

Now that BSW has developed much of the technology that lies at the base of diverse applications, its staff often concentrates on ways to integrate the technologies they have created, and to market them.

They also deal, from time to time, with unusual requests, such as the one to research the possibility of creating a talking computer with a Brooklyn accent for the movie *Remo*.

"Movie people use real voices for computer speech, and then run the voices through filters," O'Malley says. "I'm not sure that moviegoers are going to be comfortable with the way a computer actually sounds."

Nevertheless, computers are talking more—and sounding better—all the time. And now, after decades of deafness, they're making big gains in learning how to listen.

Linus Pauling is 85

Linus Pauling returned to Caltech in February to celebrate his 85th birthday — and to hear himself hailed as the greatest chemist of the 20th century, one of the greatest scientists in the world, and the only person ever to be awarded two unshared Nobel Prizes. He was also called "the true father of molecular biology" and "the man most responsible for the nuclear test ban treaty" during a daylong tribute filled with talks by fellow colleagues who expanded on Pauling's historic research — and those who spoke of his efforts toward world peace. The concluding prediction: that Pauling's next official celebration will be in 1991, when he will be 90. Above: Pauling shares a brisk stroll with Caltech faculty colleagues John Baldeschwieler, Ahmed Zewail, and Peter Dervan.

The Associates welcome new members

Mrs. Marvin L. Goldberger with William Bogaard, mayor of the city of Pasadena, and Mrs. George Brumder at a dinner in the Athenaeum welcoming new members of The Associates, above. Below: William Douglas Sellers, Mrs. Vernon Barrett, and Mr. and Mrs. Richard L. Hayman. Hayman is president of The Associates. Bogaard and Sellers were among the 73 new members honored at the event.

Fox named associate provost for computing

Geoffrey Fox (professor of theoretical physics) has been named associate provost for computing at the Institute. Fox will be in charge of a newly created Campus Computing Organization (CCO), which will provide central support services to all research, educational, and administrative computing on campus. CCO replaces two former functions—Computing Support Services and the responsibilities of the dean for educational computing.

The new office was created both in response to revolutionary developments in computing technology and to changing support needs of the campus. Over the years, campus computing operations have shifted from a large centralized system in a single location to individual systems in divisions and departments that are connected by a cable network (CITNET). A tremendous expansion in the use of personal computers on campus has created other needs.

CCO will continue the services offered by its predecessors and will also offer new ones—for example, helping the administration to select, buy, install, and maintain personal computing systems; developing new shared network resources, helping to develop more effective computer uses; and supporting educational computing by maintaining hardware and software.

CCO will also maintain a Campus Computing Information Center, which will have manufacturers' documentation, software libraries, campus computing newsletters, an on-line software repository, an on-line information system, an on-line document server, and access to national teleconferences.

Many Asians support Reagan, survey finds

Continued from page 1

The attitudes of Asians and Whites are most closely aligned, Cain noted. Attitudes of Latinos and Blacks tend to merge in support of such issues as increased welfare spending, bilingual education, and support for ERA.

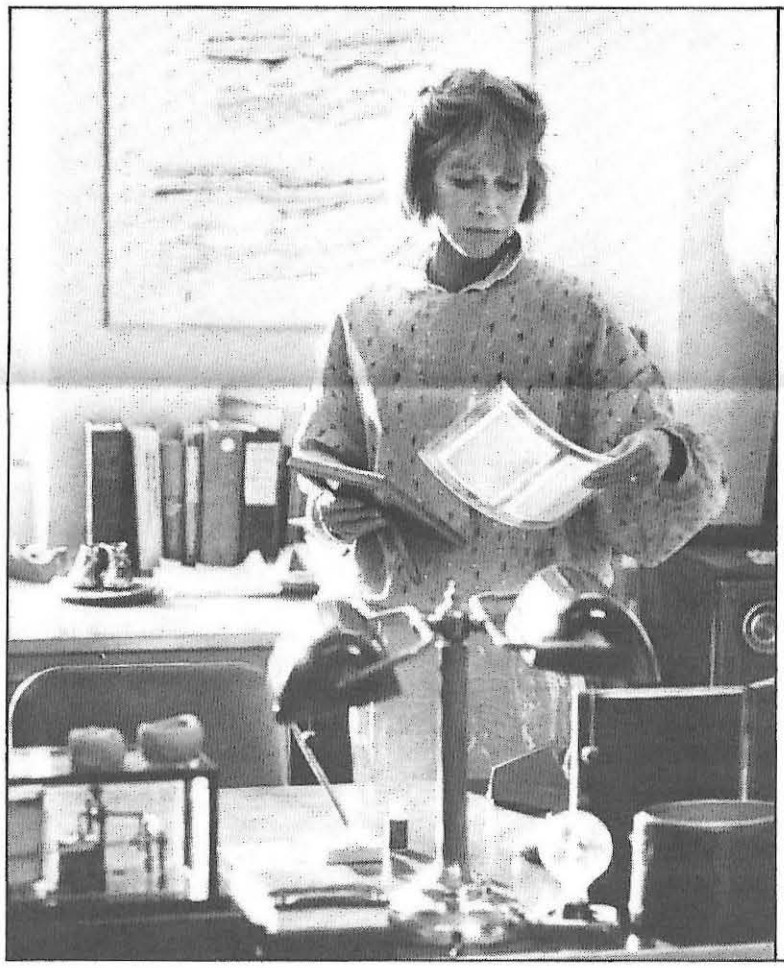
Cain also commented on the variations within the Latino community. The report found that the variation was greatest between Mexicans and non-Mexicans on arms expenditures, between citizens and non-citizens on the Simpson-Mazzoli bill for reform of immigration policies, and between higher and lower income groups on welfare expenditures.

Filming on location: on the Caltech campus

By Winifred Veronda

Why is Eddie Murphy sending his adversary flying over a table of hors d'oeuvres in the Athenaeum lounge? Who is Mary Tyler Moore visiting in the Caltech seismo lab? And why are those students in Page House lounge eating so much Domino's Pizza?

The answer to all of those riddles is that Caltech has been discovered by the entertainment media as a prime filming location—and that portions of the campus are appearing with increasing frequency on motion picture and television screens.



Mary Tyler Moore checks out Kerry Sieh's office.

"Caltech has a beautiful campus with modern and classical architecture. Its location is convenient, and because of its small student body, there aren't as many people around as at a big university to get in the film crews' way," says Bonnie Morstad of Caltech's public relations office, who is the Institute's liaison representative with commercial filming companies.

For the Institute, use of the campus for commercial filming means additional income for the general fund. When a division's operations are affected by the work, the fee is shared between the general fund and the division.

A distinction is made between filming for news and documentary purposes, which is coordinated without fee by the news bureau, and filming for entertainment or advertising, for which fees are charged, Morstad explains.

The Institute is highly selective in what it allows to be filmed on campus, Morstad stresses, noting that "We turn about two projects away for every one that we allow to film here. One of the first questions we ask about a motion picture is what its rating will be." Any request that Caltech's name be used in script or credits is carefully scrutinized and is rejected if the Institute might be embarrassed in any way.

The public relations office reviews copies of movie scripts before giving permission for filming, Morstad adds. *Real Genius*, the movie about undergraduate hijinks at a high-powered school of science and technology, took student life at Caltech as its model. Producers asked to film at the Institute but settled for Occidental and Pomona colleges. The Institute refused to lend its campus because several aspects of the plot were deemed inaccurate and unflattering in the image they projected.

The script for another film, *Just Between Friends*, met with a different fate. The movie, starring Mary Tyler Moore as the wife of a seismologist (portrayed by Ted Danson) at "Southern California Seismology Center," was released in March.

Some 45 minutes of the production were filmed on campus, including shots inside and outside of South Mudd Laboratory (with some in the office of Kerry Sieh, associate professor of geology), and in an upstairs classroom in South Mudd. Holly Eissler, a graduate student in seismology, served as technical adviser, and insisted that a real seismograph be used for an earthquake scene. Actor Sam Waterston, who played a seismologist friend of Danson, spent three hours on campus doing research for his role, Morstad says.

Another film, a science fiction movie called *Project X*, featuring a chimpanzee and starring Mathew Broderick, the young hero of *War Games*, was scheduled to film here in late winter, using the exterior of artificial-snow-laden Keck Labs as a stand-in for a building at the University of Wisconsin campus.

But the animal trainer died and the chimp escaped and spent time at large somewhere in Thousand Oaks, so filming was delayed until late March.

Most popular as campus filming sites are the Athenaeum and Parsons-Gates Hall of Administration, although permission to film inside Parsons-Gates is never given. The Athenaeum appeared in a memorable scene in *Beverly Hills Cop*, in which comedian Eddie Murphy sent his opponent flying across a lavish hors d'oeuvres table in the Athenaeum lounge, which appeared on screen as an exclusive men's club.

Television crews also gravitate to Caltech, as did those of the pilot of the series *McGuyver*, about an adventurous troubleshooter who is also a technical wizard. The episode filmed on campus showed McGuyver rescuing workers from an underground lab (Caltech's steam plant) where they had been trapped after an explosion to prevent contamination of the town's water supply.

After the pilot, five Caltech students and Morstad were invited to Paramount Studios, where they met with producers of *McGuyver* (including Henry Winkler) to offer ideas for the hero of the show to use in future episodes. Among other things, they showed Winkler how to make a battery out of a lemon, a stereo system that unlocks a bank vault, and a torch from a bike seat.

The series *Crazy Like a Fox* also came to Caltech for filming, using the Athenaeum and Dabney Hall in a segment, "Fox in Three-Quarter Time," which aired in October.

Several commercials have been made at the Institute. For example, AT&T used Gates Library, a hallway in Kerckhoff, and other locations in a series of vignettes for a commerical about the increasing influence of computers on university campuses. And Domino's Pizza used Page House lounge and student rooms in Lloyd House in a pitch for its product. Caltech students appeared in the background, and the houses were rewarded with free pizzas and money.

Although filming on campus has increased over the last year, Caltech continues to view the activity as a peripheral one that must never interfere with normal campus operations. Parking for film crews is a critical issue, for example, and recently the Institute has asked filming companies to rent space from a nearby church.

But still the filming crews come, lured by Caltech's beautiful campus and its diversity of architecture. So if that building on screen looks suspiciously like one where you took chemistry or applied physics courses, or studied seismographs, chances are that it just may be.

Dismal defeat dooms search for nerds

A Pasadena *Star News* reporter who came to the Caltech campus looking for nerds failed to find any (with the possible exception of a student playing Frisbee while wearing black socks and a bathing suit, and a professorial-looking type with orange socks flashing above his shoes).

Inspired in her search by the film *Revenge of the Nerds*, Colette O'Conner made several trips to campus. The students in the library told her to look for nerds in the dorms, while the students in the dorms said all the nerds were in the library. Students playing football on the lawn said the nerds were talking physics in Lloyd House, but the Lloyd House students were talking about music and said all the nerds were outside talking circuits.

"While you don't see them, they always push up the curve," she was told by Bill Gray, as he played pinball in Fleming House. "A nerd never leaves his room except to hand in assignments. He only talks of things ending in -O-G-Y."

Meanwhile, O'Conner concluded that few Tech students looked like nerds should look. Almost all of them wore jeans, running shoes, and sport shirts, and carried notebooks. They walked very, very fast, with one hand in their front pockets.

Eventually O'Conner encountered Ardith El-Kareh, a graduate student in chemical engineering who was carrying an armload of Chopin and Mendelssohn music books, and, when asked, said that Caltech's high concentration of motivated people means a wide choice of activities.

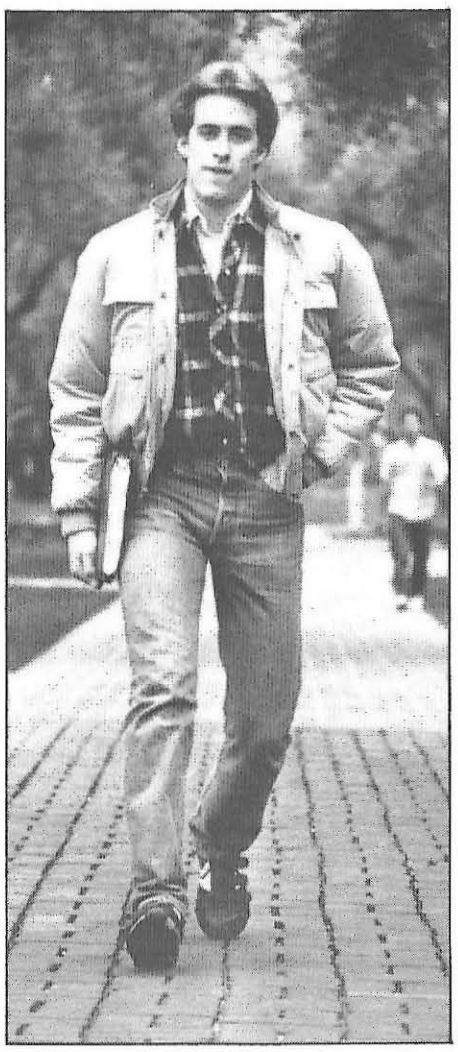
"I've definitely run into Caltech's nerd reputation with people who don't go here," said Peter Ashcroft, editor of the *California Tech*, who explained that stereotypical nerds at Caltech are reluctant to do anything unrelated to their majors.

"But on campus, while everybody thinks there are nerds, there really aren't any. You know how people are; they like to stick to stereotypes."

But Caltech students are "amazingly" into other things than science, Ashcroft reported—things like music—and are incredibly literate and very creative.

"Caltech as a campus is self-contained," he said. "People are busy with things that occupy a lot of their attention, and perhaps this lack of integration between students and the community promotes the nerd rumor."

Eight students huddling before an important play in their touch football game concurred. "You don't really see them, but you know them. They have a white glow from staring at their computer screens. But us, we're just fun kind of guys."



Freshman Greg Jensen demonstrates the typical Tech student walk: very fast, with a notebook in one hand and the other hand in a front pocket.

Carmela Kempton, of Master's Office fame, to retire

Carmela Kempton, assistant to four masters of student houses and friend—over the years—to thousands of Caltech students, will retire this month. "I don't want to retire on April Fools' Day," she says, "so I'm extending my time until around the eighth."

Kempton came to Caltech in 1972 during David Smith's tenure as master. She continued on to work with

James Mayer, Sunney Chan, and Christopher Brennen.

Over the years she played a major role in creating such events as Ephriam Schultz Day, Fabian Naismith Day, Einstein's 100th birthday party, Black Tuesday on Monday, and Chinese New Year and St. Patrick's Day bashes (not to mention gourmet cooking contests, pie nights, and hundreds of Friday mornings with coffee and doughnuts).

For these student festivities she procured camels, elephants, water buffalos, a three-foot gong, hula dancers, horses, roosters, sheep, and a hot air balloon—to mention a few of the special effects.

One of her favorite memories involves the morning when Ray Owen, then vice president for student affairs, and Mayer tossed 100 $1 bills onto a student-filled Olive Walk from the top of Lloyd House to commemorate Black Tuesday.

Special events were only a part of the job—which also involved budgeting, assigning rooms in the houses, greeting visiting parents, dispensing funds for special dates, conferring with resident associates, and fielding hundreds of requests from students. She continues to hear from many.

"I've had a wonderful time," says Kempton, who plans an extended vacation in Italy after she retires. "Say hello to all my friends."

Five on faculty lauded for teaching excellence

Caltech undergraduates have named five faculty members as recipients of this year's awards for teaching excellence. The awards are made on the basis of questionnaire responses published in the Teaching Quality Feedback Report, which annually publishes student evaluations of courses.

The teachers recognized are Yaser Abu-Mostafa, assistant professor of electrical engineering and computer science; Glen Cass, associate professor of environmental engineering; Eugene Cowan, professor of physics; Fred Culick, professor of applied physics and jet propulsion; and Jerry Pine, professor of physics.

Collins: Dreyfus Teacher-Scholar

Terry Collins (assistant professor of chemistry) is one of 13 members of chemistry or chemical engineering faculties nationwide to be named a 1985 Camille and Henry Dreyfus Teacher-Scholar for "performance and promise in teaching and research."

The award, presented by the Camille and Henry Dreyfus Foundation of New York City, consists of a $50,000 grant for five years of fundamental research and teaching.

Chan given Navas Foreign Travel Award

Sunney I. Chan, professor of chemical physics and biophysical chemistry, has been given the 1986 John Navas Foreign Travel Award, which annually honors a Caltech faculty member for outstanding dedication to the welfare and education of students.

In receiving the award, Chan is recognized for his commitment to the quality of life of Caltech students. He was master of student houses from 1980 to 1983 and is chairman of an ad hoc faculty committee to review academic requirements for undergraduates.

The award consists of $4,000 in unrestricted travel funds, which Chan will use to visit Scandinavia this summer with his family.

Innovations in microelectronics described by Mead

Enormous potential for innovation exists in the microelectronics industry, and we can anticipate many changes within the next decade, Carver Mead (the Gordon and Betty Moore Professor of Computer Science) told leaders in research and management from 70 corporations at the Research Directors' Conference on campus in February.

Mead, who talked on "The Economics of Innovation," was the initial Caltech speaker in a two-day program that featured new research at the Institute. Keynote speaker was William J. Perry, former undersecretary of defense for research and engineering, and managing partner with H&Q Technology Partners, who talked on "Entrepreneurship in Advanced Technology." In addition to Mead, 12 other Caltech faculty members from several disciplines made presentations.

One innovation described by Mead concerns a separation in the processes of fabricating and designing a chip. "We're starting to see silicon foundries where people don't insist that they design the chip just because they're going to fabricate it for you," he said, adding that "there isn't any necessary connection between the people who fabricate semiconductors and the people who invent what goes on the chip—any more than there is between people who print books and people who write them."

Mead said innovation is needed in the process of designing chips, as well as in how to fabricate them. Important in this process is a silicon compiler, already under production by a number of companies. "These are going to allow a tremendous increase in the number of designs on silicon chips," Mead said. To utilize this innovation, "the same kind of change will have to happen that took place in the automobile industry. Today, on the automotive assembly line, you can have every car different. They don't all have to be black anymore.

"This same change has to happen in Silicon Valley. Every wafer lot that goes through is going to have a different pattern on it."

Meanwhile, the standard components industry, the "smokestack" part of microelectronics, isn't going to go away, said Mead. "This industry will remain successful, and its leaders—smart people—will figure out how to compete with the Japanese."

The next wave of innovation in silicon chips will come in two parts, Mead anticipated: One will be a semiconductor fabrication service. This will enable an entrepreneur to bring in a pattern for a new application, mapped onto a piece of silicon, where experts at the service industry will fabricate it. The second innovation is the development of new design tools that will enable individuals to "do" their own design of an application onto silicon.

Attendance at the meeting—some 200 leaders representing 70 different firms—was the largest at a Research Directors' Conference.

Benzer honored for research

Seymour Benzer, James G. Boswell Professor of Neuroscience, has been named co-recipient of the Fifteenth Annual Rosenstiel Award in Basic Medical Science, presented by the Rosenstiel Basic Medical Sciences Research Center, Brandeis University. He shares the $10,000 prize with Sydney Brenner of Cambridge, England, for research into the genetic bases of nervous system development and behavior in the nematode and fruit fly Drosophila.

IA sponsors materials science conference

The Industrial Associates will sponsor a conference on April 22-23 on "Geochemical Approach to Materials Science" with Peter Wyllie, chairman of the Division of Geological and Planetary Sciences, as chairman. The conference is concerned with problems in materials science that are addressed through use of physical and chemical concepts and techniques developed for application to earth science. For information call Linda McManus, 818-356-6599.

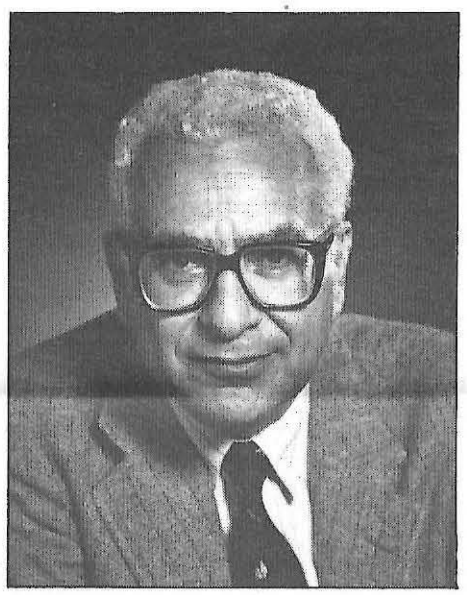
Plott honored for contributions to economic science

Charles Plott, (professor of economics), has been named a Fellow of the Econometric Society, in recognition of his "original contributions to economic science."

Plott, whose research focuses on developing mathematical and experimental tools for analyzing both market and organizational behavior and antitrust and regulatory policies, is the first Fellow to be elected from the Caltech faculty.

Murray Gell-Mann: Seminar Day keynote speaker

Murray Gell-Mann (the Robert Andrews Millikan Professor of Theoretical Physics) will be the keynote speaker at Caltech's Alumni Seminar Day on May 17. His topic will be the superstring theory, which could prove to be the key to early cosmology as well as to particle physics. According to the theory, all elementary particles are strings, instead of points, as was previously assumed.



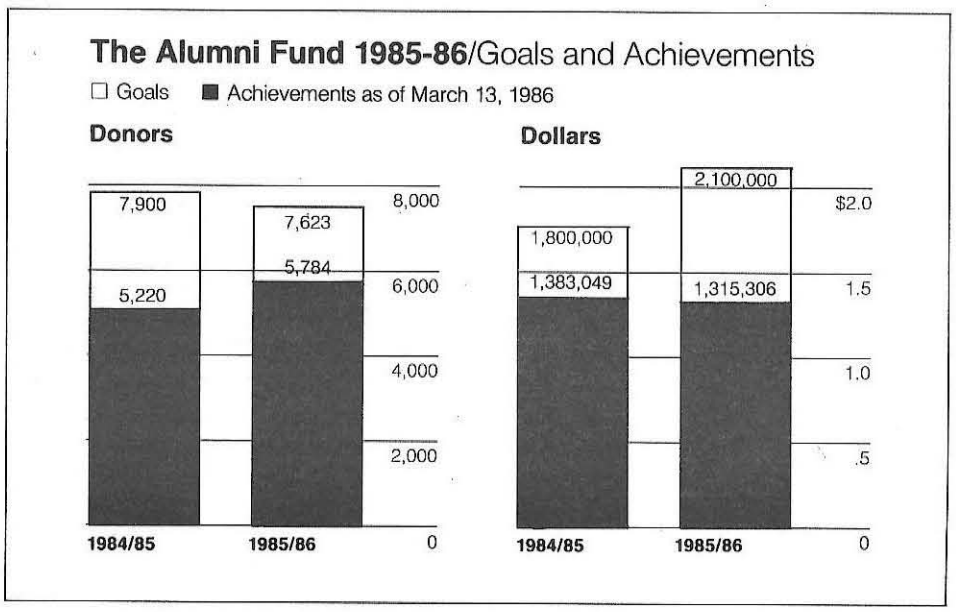
Speakers from the faculty who will present research seminars include: James L. Beck, assistant professor of civil engineering, on the Mexican earthquake; Glen R. Cass, associate professor of environmental engineering, on using color computer imaging to predict the effect of carbon particles on visibility; Robert W. Clayton, associate professor of geophysics, on seismic tomography; Robert H. Grubbs, professor of chemistry, on polymer chemistry; Daniel J. Kevles, professor of history, on "God, Man, and Genetics"; Mary B. Kennedy, associate professor of biology, on synapse behavior and the effects on learning and memory.

Kenneth G. Libbrecht, assistant professor of astrophysics, on oscillations of the sun; Bruce C. Murray, professor of planetary science, on the Martian polar regions; Jean-Paul Revel, the Albert Billings Ruddock Professor of Biology, on cell gap communication; Wallace L. W. Sargent, the Ira S. Bowen Professor of Astronomy, on the Keck Telescope.

John H. Schwarz, professor of theoretical physics, on superstrings, Thayer Scudder, professor of anthropology, on the effects of large-scale engineering projects on local populations in third world countries; Edward C. Stone, professor of physics, on the Voyager 2 encounter with Uranus.

Presentations by three SURF (Summer Undergraduate Research Fellowship) students will be a program feature. These speakers are: Diana Foss on "A Search for Short Period Binary Dwarfs"; Ara Kassabian, on feasibility studies concerning communication and propulsion aspects of a mission to the nearer stars; and Tracy Petersen on the feasibility of a turbine-driven automotive coolant pump.

Caltech's 49th Alumni Seminar Day will begin at 8:15 a.m. with registration in Dabney Lounge. Exhibits, a picnic lunch, a wine and cheese reception in the Alumni House, dinner in the Athenaeum, and a Glee Club concert in Beckman Auditorium will be features.



Swimmers match record of '50 squad

Basketball

The Caltech basketball team concluded an exciting season with a 13-11 overall record, defeating LaVerne, Occidental, Pomona, and Whittier. How could Tech improve so much as to accomplish these amazing victories?

The answer can be found in an experiment in which Caltech formed a team that plays against junior varsity rather than against varsity teams of SCIAC schools. The purpose is to make Caltech more competitive in league encounters.

The Beavers played extremely well in defeating an excellent Whittier JV team 55-52, and nipped the poets again 71-69. Tech lost a heartbreaker to Claremont in overtime, and a second contest in the final seconds, 58-55. The Beavers lost a close decision to La Verne 61-59 before paying that team back with a 10-point victory, 79-69. Caltech split games with Pomona-Pitzer and Occidental and lost two games to Redlands.

In non-conference play, Tech earned a second place finish in the Christ College Tournament, defeating LIFE College only to lose in the finals to a very talented Christ College. The Beavers also recorded a victory against the alumni, 65-52. Tech posted additional victories against Marymount College and Pacific Christian College.

Senior Captain Brian Porter and Junior Ed Zanelli led the Beavers in several areas. Both players averaged around 16 points per contest, while Porter averaged 9 rebounds. Both Zanelli and Porter played good defense. Junior center Brett Bush and senior forward Jim Helgren helped in the post area, scoring 12 and 9 points, respectively. Forward Jeff Lester contributed mightily, along with hustling Bill Gustafson. Three freshmen—Brad Scott, Adam Kaloustian, and Tom Bewley—helped Ed Zanelli in the backcourt, while Rob Fatland, Adam Slovik, and Jed Lengyel rounded out a Beaver team with a lot of depth.

In the conference race, Pomona-Pitzer won the championship for the first time since 1958, followed by Whittier and Claremont-Mudd.

Soccer

The Caltech soccer team finished its season with a 5-12 record. One defeat came at the hands of the alumni, who seem to be gaining in strength and numbers each year. "It was good to see John Rogers back after some 12 years," says Coach Don Cameron. "He looked as good as ever!"

As usual, the season kicked off before the first week of practice was completed, and the team required several weeks to get into shape. But by the second half of the season, the team was playing well together and was very competitive, defeating Redlands 4-2 and Whittier 4-3. Both games were decided in overtime. Claremont-Mudd won league honors with La Verne a close second.

Achieving individual honors were Mike Keating, team captain, and John Josephson, both of whom were named to all-conference second team.

Mike Keating was named Tech's most valuable player. Others who made excellent contributions were Van Eric Stein in goal, Steve McNally and Derek Ney at fullback, Paul Cabral and Konstantin Othmer at halfback, and Alan Kwentus, Doug Roberts, and Randy Bownds at forward.

Scott Karlin finished his soccer career at Caltech with an outstanding game against Occidental—by far his best at Caltech. Ed Felten, a graduate student, used up his final year of eligibility, playing in his usual sterling style.

Women's Volleyball

New season, new coach—and another rebuilding year under Laurianne Williams. Five players from last season's team returned and were joined by an exciting group of new players. Senior Tammy Choy, again playing volleyball before the tennis season started, joined Lynn Hildemann as a setter. Jeanine Gainey, a senior, was a tenacious defender and server. Sophomore Nicole Vogt was much improved as a center blocker, and sophomore Linda Schlueter, the hardest hitting member of the squad, played a good all-around game.

Three first-year students were among the new players: Karen Oegema, Kyuson Yun, and Carol Choy. Graduate students Julie Moses and Chris Wilson were mainstays on both offense and defense. Staff member Nannette Loft joined Tammy Choy and Hildemann in a newly designed 6-3 lineup. Staff member Courtney Smith played some excellent volleyball at both outside and center.

Although the team's record was one win (against Whittier) and nine losses, the women held their own against heavy competition from the rest of the league. La Verne was first in the SCIAC, and took second place in NCAA Division III playoffs.

Wrestling

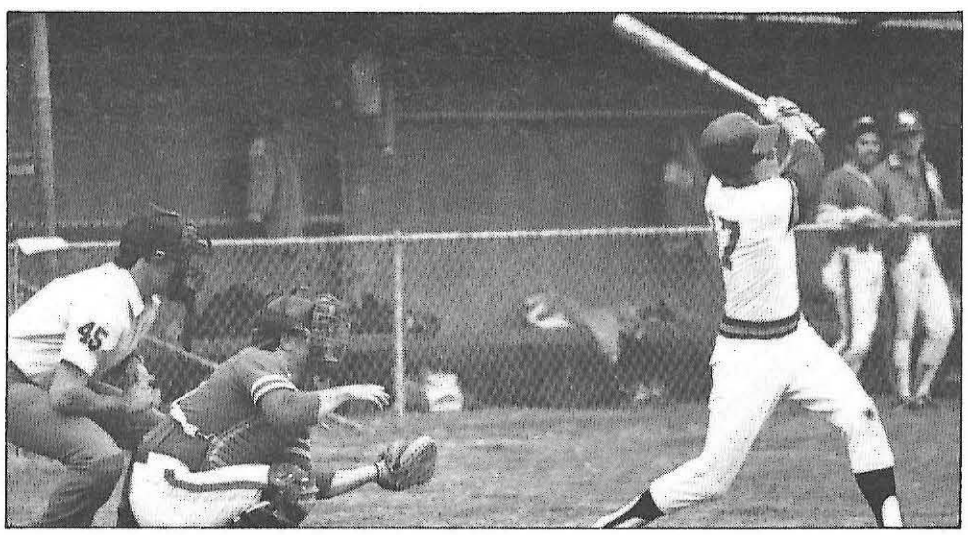
Caltech's 1986 wrestling team members fought gallantly this year to save their sport as an intercollegiate activity. The small number of southern California colleges sponsoring the sport created an abbreviated season. Nevertheless, a determined number of Beaver grapplers carried on in a spirited effort to post a 2-5 record.

Seven new faces fortified team captains Mike Burl and Tim Cotter. Rounding out the squad were William Foster, Don Buchholz, Brian Catanzaro, and Konstantin Othmer —all at 142 pounds; Richard Doherty at 158 pounds, John Cruse at 167 pounds, Wayne Perley at 177 pounds; Earl Taylor at 190 pounds; and heavyweight Scott Miskovish.

Dual meet wins over the University of La Verne provided season highlights as Caltech prevailed 22-18 and 34-9. The season provided some exotic competition as the Beavers faced mat competition from John Carroll University, Tempe, UC Davis, Arizona State University, BYU, and Stanford.

The coveted Thomas W. Latham Award went to Tim Cotter. The season concluded with 150-pound Cotter and 177-pound Burl in action at the NCAA regional tournament hosted by the University of Wisconsin, Whitewater.

Mike Burl placed second and Tim Cotter third, and the team finished sixth among ten in the western region. This was the team's best showing since the regional tournament system was reorganized in 1984, placing Tech in competition with schools with enrollments as large as 17,000.



Mike Keating, at bat, faces challenge from Pacific Coast Baptist Bible College in an early season baseball contest. Tech defeated PCBBC 11-6.

Swimming

For the swim program this season was the best of times and the worst of times. The men's team was joined by a large group of promising freshmen who combined with some talented upperclassmen to produce an outstanding group of swimmers. For the women's team the story was different; only four women swimmers finished the season.

In the standings the men placed third behind Claremont and Pomona-Pitzer—a feat not accomplished since 1970. The men's season began in December with victories over Oxy, 67-33, and Redlands, 68-42. After holiday break, Whittier fell to the Tech swimmers, 78-33. Both Oxy and Redlands gamely demanded rematches, but fared no better, losing 72-39 and 70-27, respectively. In the last two home meets, UC Riverside was swamped 73-38 and Pasadena City College ventured across the street for a disheartening 85-7 defeat. The only losses were to Colorado College and NCAA Division 3 top-ranked Claremont.

The Beavers ended the season with a 7-2 dual-meet record—one that matches the record of the 1950 squad led by the semi-legendary Bill Libbey (BS '52).

At the three-day conference meet where final placements were determined, the Caltech and Oxy men were in a close battle for third place. With great swims from Brian Hayes (2:07.52 200 IM) and Jim Taylor (22.44 50 free), Oxy held only a small lead (70 to 67.5) over Tech after the first day.

The women's team led off the second day with an excellent 200 free relay, breaking the two-minute mark with 1:59.07.

The last race of the day proved closest, as Caltech's, Oxy's, and Whittier's 800-free relay teams took to the water. Tech touched ahead of the other schools, dropping 13 seconds from the previous best to post a 7:35.60.

The conference meet ended with Claremont dominating, followed by Pomona (518), Caltech (362.5), Oxy (305.5), Whittier (166), and Redlands (70).

Zion, Cedar Breaks focus of fall trip for alumni

A trip to Zion National Park and Cedar Breaks National Monument is planned for Caltech alumni October 5-10, 1986, with Robert P. Sharp (the Robert P. Sharp Professor of Geology, Emeritus) as guide. The trip will introduce its participants to the spectacular scenery, geology, fall colors, and human and natural history of the southern edge of the high plateaus of Utah.

Participants will assemble in Las Vegas on Sunday, October 5, and leave for St. George, Utah, on Monday, October 6. Traveling by bus, they will visit the Valley of Fire in the Muddy Mountains, Mormon Mesa, the gorge of the Virgin River, and Snow Canyon in the St. George area.

Tuesday, October 7, will feature Cedar Breaks, with an inspection of the topography of the St. George area, the silver mining area at Leeds, the towering Hurricane Cliffs, Cedar Canyon, and Kolob Canyons. The travelers will spend the night in St. George.

On Wednesday, October 8, and Thursday, October 9, the group will explore Zion Canyon and will take several moderate hikes. After spending the night at Zion Lodge on October 8, they will return to Las Vegas where the group will spend the night and disband after breakfast on Friday, October 10.

The trip will be dedicated to James Luscombe (BS '51), who died in May 1984, and whose dedication to Caltech and love of the southwestern United States make this trip an appropriate memorial.

Places are limited and preference will be given alumni who have never participated in an Alumni Association travel program. After June 15, remaining places will be filled on a first-come, first-served basis. The cost will be $650 per person, double occupancy, and $750 per person, single occupancy. This cost covers all expenses from dinner on Sunday through breakfast on Friday.

To make a reservation, return the form below with a $100 deposit per person (spouses and children over 12 are welcome) to the Caltech Alumni Association, 1-97, Pasadena, CA 91125.

CALTECH ALUMNI ASSOCIATION
ZION - CEDAR BREAKS TRIP, OCTOBER 5-10, 1986

Please make _____ reservations for the alumni trip to Zion-Cedar Breaks.

Name(s) _____ Class Year _____

_____

Address _____

_____ Phone _____

I enclose a check for $ _____ ($100 per person) as a deposit. (Make check payable to the Caltech Alumni Association, and mail to 1-97, Pasadena, CA 91125.)

Alumni Activities

For more information about any event listed below, please contact Janet Davis, executive director of the Alumni Association, at (818) 356-6594.

May 17. 49th annual Seminar Day on the Caltech campus, featuring faculty research seminars and exhibits. Open to all alumni, families, and guests.

June 13. Commencement on the Caltech campus.

June 19. Annual meeting and dinner honoring new honorary alumni and officers, at the Athenaeum.

October 5-10. Zion-Cedar Breaks trip for Alumni Association members and families or guests. Breathtaking scenery amid fall colors in southern Utah. See related article in this issue for details.

Reunions

Caltech alumni who are celebrating five-year reunions this year are anticipated to turn out in record numbers! All classes should have received an initial mailing, and more information will follow. Please contact the Alumni Office at (818) 356-6592 if you need more details. Reunion dates this year are:

April 19: Classes of 1951 and 1956. **April 26:** Classes of 1941 and 1946. **May 2:** Class of 1971. **May 9:** Class of 1966. **May 16 and 17:** Class of 1961—25-year reunion. **May 30:** Class of 1976. **June 6:** Class of 1926 and 1931. **June 7:** Class of 1936 Half-Century Club luncheon. **June 13:** Class of 1981.

Alumni board nominates officers

The board of directors of the Alumni Association met as a nominating committee on February 21, in accordance with section 4.01 of the bylaws. Five vacancies on the board, and a chapter representative, in addition to the positions of president, vice president, secretary, and treasurer, are to be filled. These are the nominees for terms beginning at the close of the annual meeting in June 1986:

President: Paul H. Winter (BS '44)

Vice president: David J. D. Harper (MS '77)

Treasurer: Charles H. Holland, Jr. (BS '64)

Secretary: Rhonda L. MacDonald (BS '74)

Directors

Edward L. Krehbiel (BS '58)—one year (chapter representative)

William M. Pence (BS '65, MS '67) —three years

Lynette D. Schneider (BS '81)—three years

Gary W. Stupian (BS '61)—three years

Victor V. Veysey (BS '36)—three years

Donna Mae Wolff (BS '77)—three years

Section 5.01 of the bylaws provides that members may make additional nominations for directors or officers by a petition signed by at least 50 regular members in good standing, providing the petition is received by the secretary no later than April 15. In accordance with section 5.02 of the bylaws, if no additional nominations are received by April 15, the secretary casts the unanimous vote of all regular members of the Association for the election of the candidates nominated by the board. Otherwise a letter ballot is required.

Below are biographical summaries of those nominated for directors.

Edward Krehbiel

Edward Krehbiel is an instructor at Grossmont College in El Cajon, California. As a student, he was a member of Ricketts House, the Beavers, and the Sailing Club, and he lettered in football for two years, in track for three years, and in soccer for one year.

William M. Pence

Pence is president, Group III Electronics, Redondo Beach, California. He was president, secretary, and social chairman of Lloyd House, chairman of the ASCIT executive committee, and holder of an Honor Key.

Lynette D. Schneider

Schneider is research and development manager for Quantimetrix in Hawthorne, California. She was Fleming House social chairman and active in ASCIT.

Gary W. Stupian

Stupian is a member of the technical staff of Aerospace Corporation in El Segundo, California. He was a member of the Alumni Association Seminar Day Committee from 1981 to 1985 and this year is its general chairman. He is also chairman of the class of 1961 25-year reunion. As a student he was active in Throop Club. Stupian is a member of The Caltech Associates.

Victor V. Veysey

Veysey is director emeritus of the Caltech Industrial Relations Center. He is former U.S. Congressman, assistant secretary of the Army, and member of the California Legislature. Veysey received Caltech's Distinguished Alumnus award in 1978. He is a member of The Caltech Associates and the Gnome Club, and he was secretary of the Alumni Association in 1943-44. As a student he was president of the senior class and the Press Club, editor of the *California Tech*, a member of the Board of Control, and a letterman in track and cross country. He also was holder of an Honor Key.

Donna Mae Wolff

Wolff is a trajectory analyst for JPL. As a student, she was secretary of Lloyd House and a member of Caltech Christian Fellowship.

JPL: home of two historic landmarks

Two areas of JPL have been designated as National Historic Landmarks by the Secretary of the Interior: the 25-foot space simulator and the Space Flight Operations Facility (SFOF). Landmarks are chosen for national significance by the National Park Service.

The space simulator is one of the largest and oldest in the free world. Its high-intensity quartz lamps, through integrated optics, can provide a uniform parallel beam of energy equal to two times the intensity of sunlight on earth. The simulator can also expose spacecraft to temperatures ranging from 250 degrees Farenheit to minus 250 degrees F.

The SFOF is the central switchboard for the worldwide Deep Space Network.

Annual reports here

Copies of the 1984-85 Caltech annual report are available and will be mailed to anyone who requests a copy. Send your request to the Office of Publications, Caltech 1-71, Pasadena, CA 91125.

NAME _____

ADDRESS _____

_____

Peter Cho, a junior majoring in physics, has been chosen by Time *magazine as one of 20 winners of $3,000* Time *Achievement Awards. Cho is featured in the April 7 campus edition. He was chosen for academic excellence as well as achievement outside the classroom. In Cho's case, the latter included creation, as a SURF (Summer Undergraduate Research Fellowship) project, of a movie about the birth, life, and death of a star.*

Obituaries

1924
CARL MILLER on September 8, 1985.

1931
EDWARD S. PEER, whose death in February 1985 was noted in the April 1985 *Caltech News*. He was mistakenly reported as belonging to the class of 1935. We regret the error. Peer was actively involved in development of the first plastics and helped to formulate the glue used in construction of the Spruce Goose. Contributions to a memorial fund in his name may be sent to the Office of Memorial Funds, Caltech 1-36, Pasadena 91125.

1933
ROBERT D. FLETCHER, MS '34, MS '35, on October 27. His career as a meteorologist included service with American Airlines, the U.S. Weather Bureau, and the U.S. Air Force Air Weather Service, from which he retired in 1971. He received the U.S.A.F. Decoration for Exceptional Civilian Service in 1962 and 1972. Fletcher was living in Tubac, Arizona.

1938
ULRICH JETTER, MS, in December. He was living in Stuttgart, West Germany, with his wife, Irma, where he was an engineering consultant.

1940
JAMES BIGLOW in May 1985. He was a retired captain in the U.S. Navy and was living in Rancho Palos Verdes, California.

1941
STANLEY STROUD, MS '47. He was senior development engineer with N. L. McCullough in Houston. His wife, Ruth, survives him.

1943
JAMES BLAYNEY on January 5. A self-employed engineer for 38 years, he was involved in the construction of several public buildings in Fresno, California. He is survived by his wife, Grace.

1944
WARREN AMSTER, MS '47, Eng '48, in December. He had been president of Peace Machines, Inc., in Thousand Oaks, California.

1945
ROBERT C. POOLMAN on January 5. He was president of Robert C. Poolman & Associates in South Pasadena. A resident of Sierra Madre, he was active in local city government, and served as chairman of the planning commission for five years. He is survived by his wife, Rosemary, two sons, a daughter, and four grandchildren.

1946
ROBERT L. NEWBROUGH in 1985. He was a high school chemistry and physics teacher in Bakersfield, California.

1947
MORTON ALPERIN, MS, PhD '50, on December 12. He had been director of the Advanced Studies Air Force Office of Scientific Research, research scientist at JPL, and president of Flight Dynamics Research Corporation in Van Nuys, California. He is survived by his wife, Elayne, and two sons.

1949
WILLIAM E. PALMER, MS '50, on June 16, 1985. He was president of Terminal Grain Corporation in Sioux City, Iowa, where he had been employed since 1951. He was active in many professional, civic, and charitable organizations. He was also a volunteer coach of the Mariners Swimming Club. Palmer is survived by his wife, Margaret, two sons, a daughter, and three grandchildren.

1953
LEON SCRYDLOFF, MS, on August 12. He was a managerial liaison engineer in the Ventura Division of Northrop Corporation in Newbury Park, California.

1955
TOYOO TOMITA, MS, on July 30 in a traffic accident in Japan. Most recently working in Cairo, he had previously been international cooperative liaison officer with the National Institute of Agricultural Science in Tsukuba, Japan.

1970
SAMUEL FEINSTEIN, MS, on January 18, having suffered from a brain tumor since 1979. He was a senior engineer at JPL. His wife, Barbara, survives him.

Personals

1936
SIMON RAMO, PhD, retired vice chairman of the board of TRW Inc., has been named winner of the John Fritz Medal for 1986 in recognition of his "pioneering contributions as engineer, educator, and industrial leader."

1937
JAMES W. DAILY, MS, PhD '45, professor emeritus of fluid mechanics and hydraulic engineering at the University of Michigan, was chosen to deliver the 1985 American Society of Civil Engineers' Hunter Rouse Hydraulic Engineering Lecture at an ASCE specialty conference.

1942
WARREN GILLETTE retired from the practice of medicine in August and plans to remain in Boulder, Colorado.

1944
YE KE WU (GEORGE YIK) writes, "I have retired after 32 years with the Second Institute of Project Planning and Research, Ministry of Machine Building, located in Hangzhou. I have just joined the Shanghai Overseas Returned Scholars Association and expect to meet some of the other Caltech graduates in Shanghai soon. After a period of adjustment to the life of a senior citizen and some traveling inside China, I expect to join a retired engineers' consulting organization."

1946
GEORGE L. BATE reports from Westmont College in Santa Barbara, "Received a $75,000 grant from a private foundation for purchase of personal computers to set up a compugraphics laboratory for our engineering physics major. This lab is modeled after the physics computation lab in Bridge Laboratory."

1953
JOHN CAGLE retired from CONOCO after 33 years. He was manager of geology at the time of his retirement. Future plans call for a move from Houston back to California, probably near San Luis Obispo.

GORDON EATON, MS, PHD '57, Texas A&M University's provost since February 1983, will become president of Iowa State University next summer. Eaton had previously worked with the U.S. Geological Survey and in academic positions at UC Riverside and Wesleyan University.

1956
GERARD ROBIN, MS, sends this update: "I have been working for ITT since 1970. After many years at LCT, which used to be the French laboratory of ITT, I moved to the European headquarters in Brussels, where I now have the position of Technical Director, Network Systems. In that position, I coordinate new developments in telecommunications in ITT's development and research centers throughout Europe. I have also published a small book, *Les Telecommunications*, in French, in an encyclopedic collection. Visitors to Brussels are invited to contact me! (ITT Europe, Inc., Avenue Louise 480, B-1050 Brussels, Belgium.)

DONALD J. SELDEEN earned his PhD in psychology from the California School of Professional Psychology in September and currently has a private practice in Santa Monica. He reports that in his third career he has finally found a home.

1959
J.M. (JIMMY) WU, MS, PhD '65, professor of aerospace engineering at the University of Tennessee Space Institute, has been selected as the first B. H. Goethert Professor, a professorship honoring the past services of Dr. B. H. Goethert, the first director and first dean of UTSI and now dean emeritus.

1960
LEONARD MALEY, JR., associate professor of business and economics at Nazareth College in Rochester, New York, has been named to receive an Advisor Certificate of Merit in a national competition sponsored by the American College Testing Program and the National Academic Advising Association.

EDWARD SIMON, PhD, writes, "By Caltech standards my personal accomplishments are unremarkable. (I am a full professor of biology at Purdue University, specializing in interferon research.) However, of my four children, two sons are—or soon will be—orthodox rabbis and my older daughter is a rebbitzen (rabbi's wife). My youngest girl is still at home. I doubt if any other alumnus can make such claims."

1961
JAMES BLACKMON has been appointed manager of advanced energy systems at McDonnell Douglas Astronautics in Huntington Beach, California.

JAMES KALLIS, MS, has been promoted to chief scientist at Hughes Aircraft Co. His recent work has been on the cooling and reliability of electronic equipment.

1964
RICHARD W. UHRICH, a mechanical engineer at the Naval Oceans System Center in Point Loma, California, was honored in Washington, D.C., as one of the nation's ten outstanding handicapped employees. He is the major contributor to the computer programming of a free-swimming search system called the Advanced Unmanned Search System and has won several other awards for his accomplishments. A spinal injury in 1968 left him a quadriplegic.

1966
A. MEISEN, MS, professor of chemical engineering at the University of British Columbia, was recently appointed dean of the faculty of applied science.

1968
DAVID C. ERLICH recently earned a first-degree black belt in the martial art of Aikido. An experimentalist in high-pressure shock-wave physics at SRI International in Menlo Park, California, he also is an Aikido instructor and minister in the Universal Life Church. He lives in Palo Alto with his wife, Marta, two sons, and six other housemates in a 90-year-old mansion.

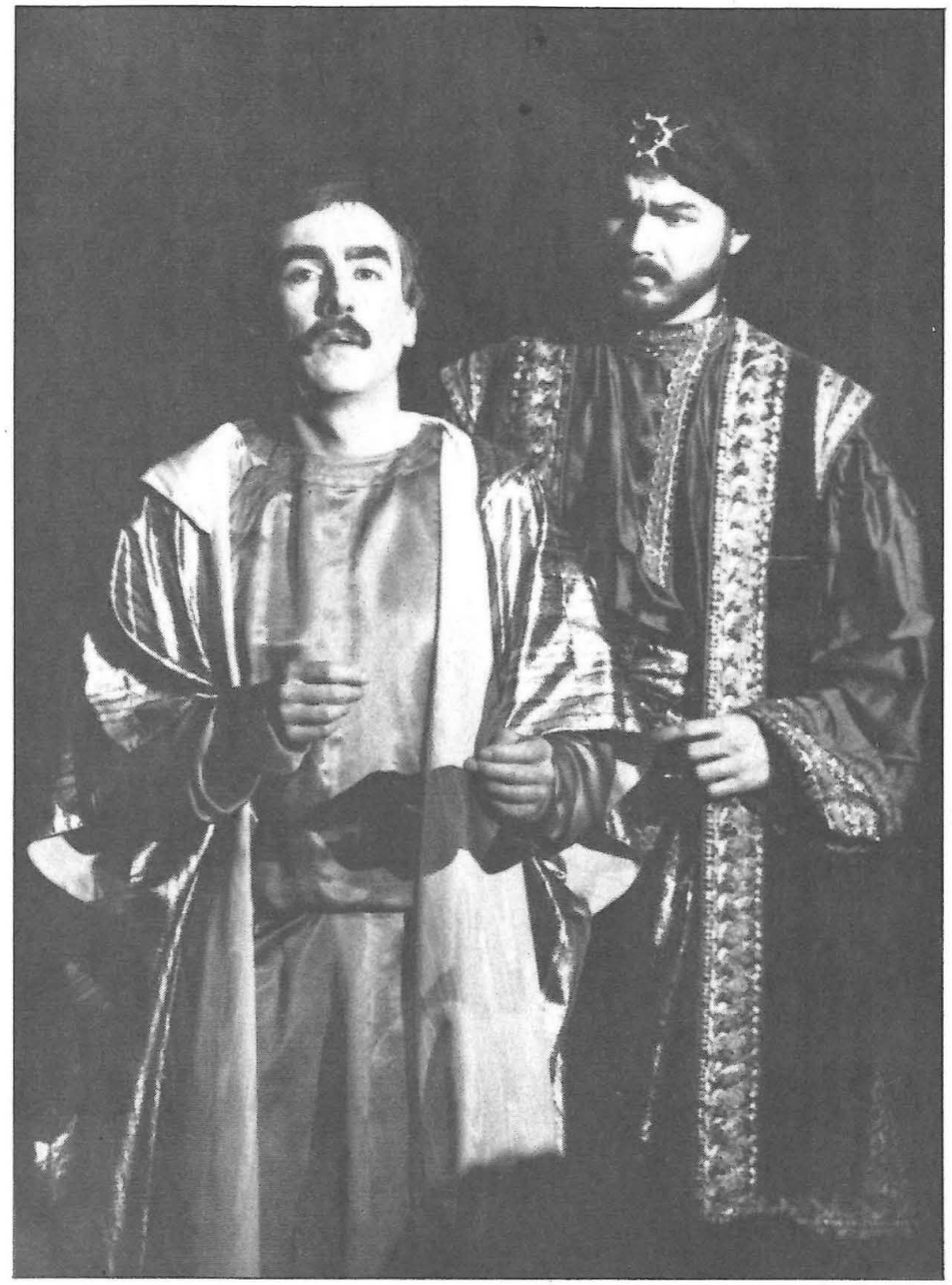
1969
MICHAEL C. MacLEOD has been named associate director of the Science Park Research Division of the University of Texas System Cancer Center near Houston. He joined the division in 1982 as an assistant biochemist and assistant professor of biochemistry.

1974
ANITA CRAFTS-LIGHTY is the founder and editor of BioCommerce Data Ltd., of Berks, U.K., a new company that will produce *Abstracts in BioCommerce*, the biotechnology industry's leading commercial news abstracting service.

DAVID PEPPER, MS, PhD '80, a staff physicist at Hughes Research Laboratories in Malibu, California, and an adjunct professor at Pepperdine University, is the author of "Applications of Optical Phase Conjugation," which appeared in the January 1986 issue of *Scientific American*, and he wrote "The Amateur Scientist" column which appeared this month in the same magazine.

1978
ALAN PAETH writes, "Cathy and I left Silicon Valley (Stanford and Xerox PARC) to begin PhD studies here in '83, under KELLOGG BOOTH (BS '68). We were wed in August '83 in Santa Cruz, made our getaway by helicopter, and are now settled in Waterloo, Ontario. I went from 'rich young domestic bachelor' to 'poor married foreign grad student' in 40 days."

1981
JAMES HORN announces that he recently opened an office as consulting mechanical engineer in Sebastopol, California.



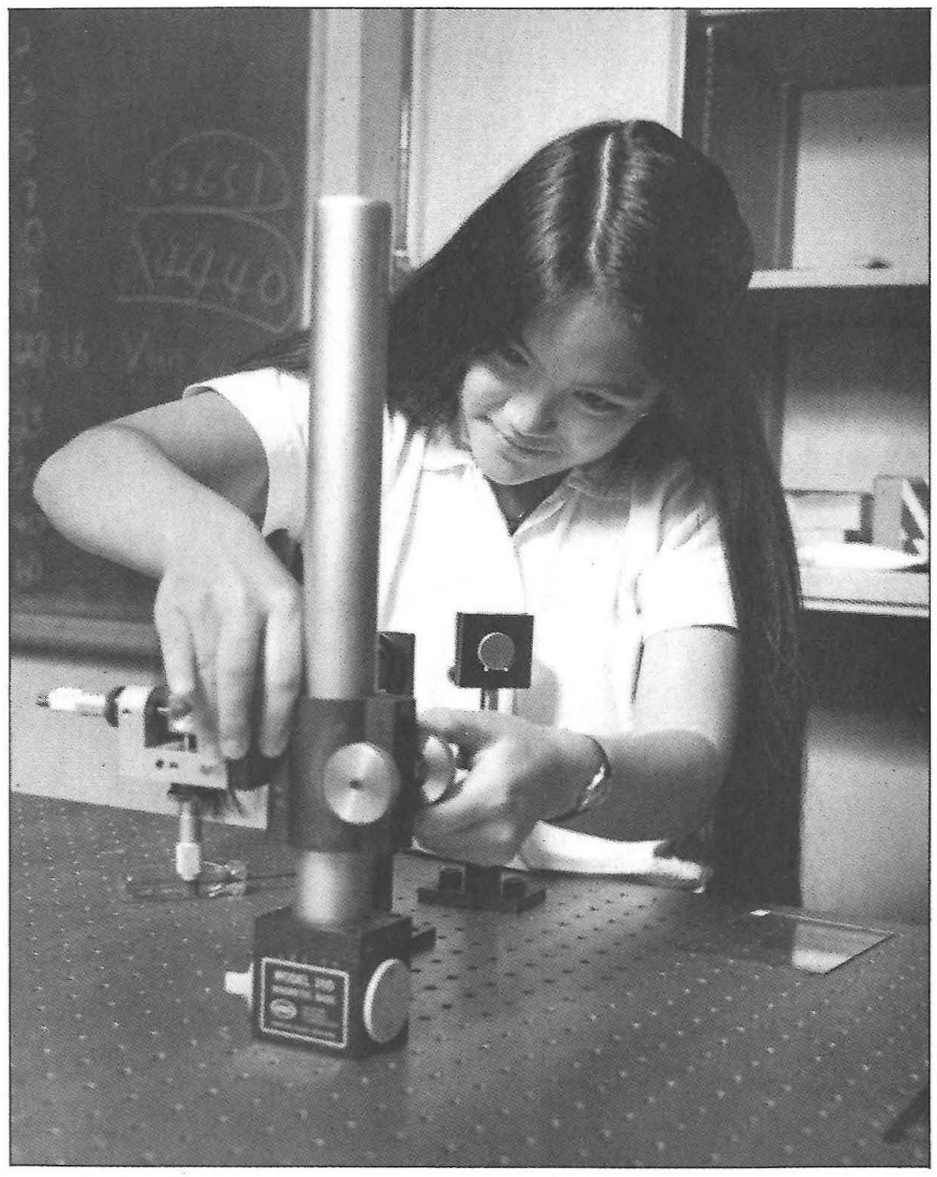
Rodney Goodman (associate professor of electrical engineering) and Robert Lang (BS '82, a graduate student in applied physics) played leading roles as Caliph and Wazir, in the Caltech community musical, *Kismet*.

CALTECH NEWS

California Institute of Technology
1201 E. California Boulevard
Pasadena, California 91125

Published for Alumni and Friends of the
California Institute of Technology
Volume 20, No. 2, April 1986

CALTECH NEWS



Senior Joy Watanabe teaches a holography lab. See page 3.

April 1986